Abstract of the Disclosure

A SHARED RESOURCE QUEUE FOR SIMULTANEOUS MULTITHREADED PROCESSING

1   A queue, such as a first-in first-out queue, is incorporated into a

2   processing device, such as a multithreaded pipeline processor. The queue

3   may store the resources of more than one thread in the processing device

4   such that the entries of one thread may be interspersed among the entries of

5   another thread. The entries of each thread may be identified by a thread

6   identification, a valid marker to indicate if the resources within the entry are

7   valid, and a bank number. For a particular thread, the bank number tracks

8   the number of times a head pointer pertaining to the first entry has passed a

9   tail pointer. In this fashion, empty entries may be used and the resources

10 may be efficiently allocated. In a preferred embodiment, the shared resource

11 queue may be implemented into an in-order multithreaded pipelined

12 processor as a queue storing resources to be dispatched for execution of

13 instructions. The shared resource queue may also be implemented into a

14 branch information queue or into any queue where more than one thread

15 may require dynamic registers.